

# Intention - behavior dynamics in MOOCs Learning. What happens to good intentions along the way?

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# Intention-behavior dynamics in MOOCs Learning; What happens to good intentions along the way?

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**Abstract**— In this study, we introduce a model that captures and visualizes the dynamical process of individual intention forming and the translation of this intention into actual behavior when learning in MOOCs. To validate the model and further our understanding of learning in MOOCs, we constructed a short survey based on this theoretically grounded intention-behavior dynamics model. This survey was sent to MOOC learners who at the time of their respective MOOCs indicated that we could contact them for further research purposes. The combination of open and closed questions referred to the most recent MOOC they took and was answered by 84 learners. The results revealed that most learners start a MOOC with a specific intention in mind, but that nearly one third of these learners reformulates this initial intention, once or more often, at some point due to barriers they encounter which hinder or prevent them from reaching their individual intentions. These barriers are mainly non-MOOC related, which may be valuable input for future research as well as guide the development of interventions for supporting learners to reach their personal learning intentions.

**Keywords**—MOOCs, Online learning, intention, behavior, barriers

## I. INTRODUCTION

Initially MOOCs were received with great enthusiasm. Yet, after a short time it appeared that only few learners completed their courses; dropout rates as high as 95% were (and still are) often reported [1]. The initial excitement was followed by disappointment. The focus on these rates has its origin in traditional education, where not finishing an educational program and thus not getting the diploma equals failure [2]. MOOCs however, provide an exceptional learning environment which should not be compared to traditional education [3,4]. Henderikx, Kreijns and Kalz [5], proposed an alternative approach which takes the intention of the individual learner as a starting point for measuring learning success. These intentions may cover a broad spectrum from just browsing the course to finishing it and earning the certificate. This approach, despite some limitations, provides a more authentic view on learner success.

However, intention is often not a perfect predictor for actual behavior as there are many factors that may influence the process of acting out these intentions [6]. These factors that possibly hinder or prevent learners from reaching their individual intentions can be either MOOC- or non-MOOC related barriers [7,8]. With this study, we aim to further our understanding of success in MOOCs and take the next step in untangling the process of intention formulation and potential reformulation in the case of barriers. The results may serve as input for supporting learners in reaching their individual learning intentions.

## II. THEORETICAL FRAMEWORK

In our study, we wanted to develop an understanding of the process underlying individual intention-forming and the translation of these intentions into actual behavior as we expect this to be a dynamical process. The reasoned action approach [RAA; 6], served as a theoretical guideline in developing a model that could capture and visualize this dynamical process of learning in MOOCs. To describe these dynamics, we use a state diagram to depict the different states in which learners can find themselves as shown in Fig. 1. Important assumptions are that (1) learners can only find themselves in one state at a time, (2) a triggering event is needed to transit to another state, (3) learners start the process in the state ‘formulating of goal intention’ and (4) learners end the process by leaving the MOOC.

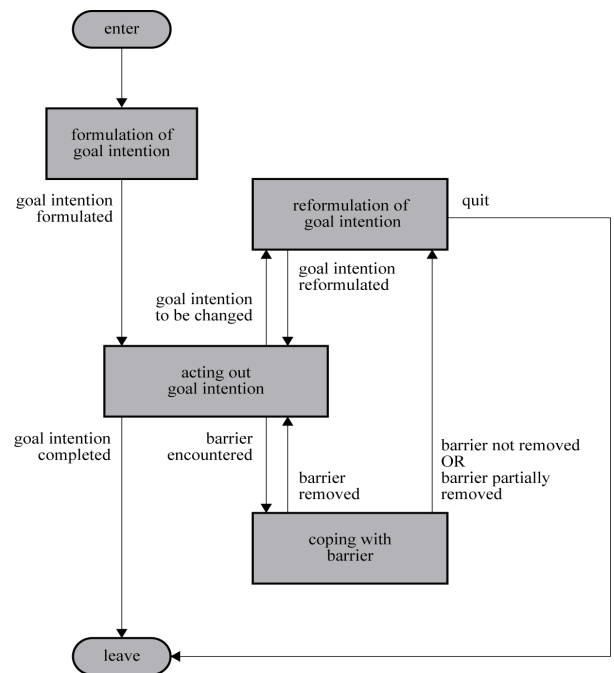


Fig. 1. Intention-behavior dynamics state diagram

In the first state ‘formulation of intention’, the individual set of intended goals is defined. This state is all about deliberating and weighing the different options an individual might have and the triggering event ‘intention formulated’ is needed to transit to the state ‘acting out intentions’. In this state learners are actively engaged with achieving their individual goals until all goals are achieved. If their

individual goals are indeed achieved, the triggering event is ‘intention completed’.

However, a barrier may be encountered which interrupts learners’ active engagement in the MOOC and transits them to the state ‘coping with barrier’. In this state learners are occupied with resolving the barrier. They may fully, partially, or not succeed in resolving the barrier, which may correspondently, lead to the respective triggering events ‘barrier removed,’ ‘barrier partially removed,’ and ‘barrier not removed.’ If the barrier is fully removed, learners can continue with achieving their individual set of goals. If the barrier is partially removed or not removed, learners may want to redefine their individual set of intended goals, which transits them to the state ‘reformulation of intended goals. In this state, it is decided to add new goals, to remove ‘old’ goals or to quit.

### III. METHOD

#### A. Participants

Participants of this study were learners who participated in a MOOC on Marine Litter in 2015 and in 2017 and at that time indicated that we could contact them for future research purposes. A total of 423 learners were invited to participate in this study; 84 learners actually completed the questionnaire (56 women, 28 men,  $M_{age} = 40,9$ , age range = 21-90 years).

#### B. Materials

To gain insight in the possible intention-behavior dynamics of the learners, a self-constructed set of open and closed questions was formulated which were based on the theoretically grounded intention-behavior dynamics model. The questions referred to the most recent MOOC these learners participated in in the last two years (thus did not refer to the Marine Litter MOOC they participated in unless that MOOC was their most recent MOOC). Example questions are: ‘Did you have a specific intention in mind when you started the MOOC?’, ‘Did your initial intention change?’, and ‘Can you explain why it changed?’.

#### C. Procedure

Between February and June 2018 learners, who at the time of their participation in the respective Marine litter MOOCs indicated that we could contact them for future research, received an invitation via the open source online survey tool Limesurvey (visit <http://www.limesurvey.org>) to complete the survey on a voluntary basis. The survey was open for several weeks.

### IV. RESULTS

The first five questions referred to the states ‘formulation of goal intention’ and ‘reformulation of goal intention’. Fig. 2. shows that most learners (85%) had a specific intention in mind at the start of the most recent MOOC they participated in. Nearly one third of the learners (30%) indicated that their intentions changed in this MOOC. Of these learners 40% answered that their intention changed more often than once. One third of the learners (32%) participated in more MOOCs in the last two years and a further 33% indicated that their intention did change while learning in these MOOCs.

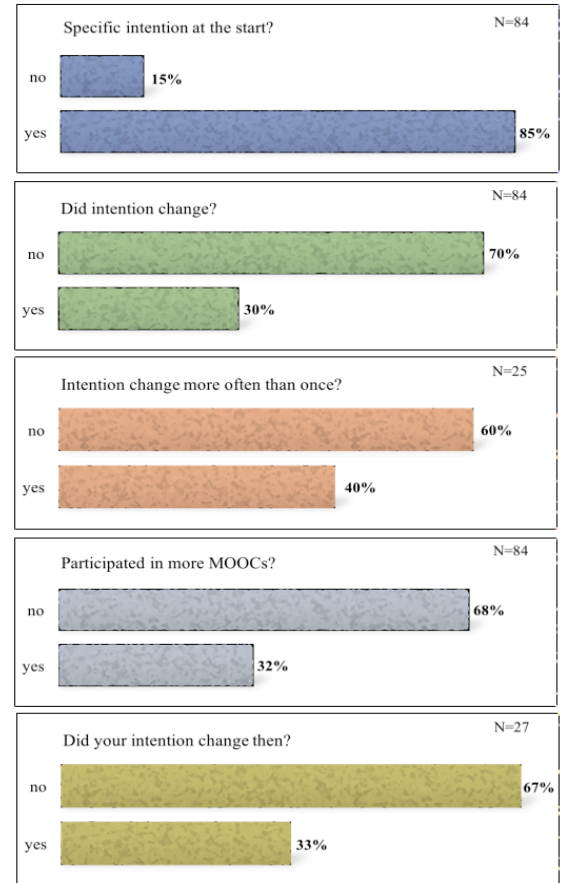


Fig. 2. Overview of answers to closed questions

In the last question, the respondents who indicated that their intention changed once or more often, were asked to specify what the reason(s) was (were) for this change. The main reasons mentioned by the respondents for reformulation of their intention were:

- “My ability to complete the MOOC changed as I got busy with other things”
- “Other commitments became higher priorities”
- “Changes in life or work demands were the biggest reason for changes of intention”
- “I did not have enough time to finish the MOOC”
- “The interaction with the instructors was deceiving”
- “The intention change was due to poor internet”
- “I underestimated the amount of time”
- “In the end, I couldn’t complete due to time constraints and commitments”

## V. DISCUSSION

This explorative study, was a next step towards understanding success in MOOCs. We tried to disentangle the intention-behavior process of MOOC learners to get insight into its possible dynamics. These results seem to confirm that learning in MOOCs can be a changeable and thus dynamical process for learners as nearly one third of the respondents indicated that their intention indeed changed once or more often while progressing through the MOOC. These changes of intention can be ascribed to the encounter of barriers to learning in MOOCs. Reasons for reformulation of intention mentioned were predominantly barriers which were related to the individual learner like lack of time, work issues and family issues. This is consistent with earlier studies, which found that most barriers MOOC-learners encountered were non-MOOC related [7,8]. Future studies should expand research on learner behavior in MOOCs and specifically investigate whether learners who reformulate their intentions are equally successful in reaching their personal learning intentions as learners who indicate that they don't reformulate their intentions.

Some limitations that need to be taken into account are that we had no knowledge of the design of the MOOCs the respondents were referring to when answering the survey questions. It might be for instance, that learners who participate in paid MOOCs are less prone to reformulation of intentions than learners who participate in MOOCs which are free of charge. Also, a specific design or topic of a MOOC might, to a certain extent, also have an influence on reformulation of intentions. Lastly, this is a first study with a relatively small sample. More extensive research, as well in terms of sample size as in terms of survey questions covering more contextual information, is necessary to further disentangle the dynamics of intention and behavior.

In conclusion, the results of this exploratory study indicate that intention-behavior can be a dynamical process. A reason for these dynamics is the encounter of barriers which hinder or prevent learners from reaching their individual intentions. These barriers are found to be predominantly non-MOOC related. The results of current and future studies may guide MOOC designers and providers in supporting learners to achieve their personal learning intentions.

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